

STABILIZED ELECTROCHEMICAL CELL ACTIVE MATERIAL

ABSTRACT OF THE INVENTION

Stabilized lithiated manganese oxide (LMO) is prepared by reacting cubic spinel lithium manganese oxide particles and particles of an alkali metal compound in air for a time and at a temperature sufficient to decompose at least a portion of the alkali metal compound, providing a treated lithium manganese oxide. The reaction product is characterized as particles having a core or bulk structure of cubic spinel lithium manganese oxide and a surface region which is enriched in Mn^{+4} relative to the bulk. X-ray diffraction data and x-ray photoelectron spectroscopy data are consistent with the structure of the stabilized LMO being a central bulk of cubic spinel lithium manganese oxide with a surface layer or region comprising A_2MnO_3 , where A is an alkali metal. Electrochemical cells containing the stabilized LMO of the invention have improved charging and discharging characteristics and maintain integrity over a prolonged life cycle. The electrochemical cells are stabilized against decomposition of cell components, including electrode and electrolyte components.